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Recent Developments in European Aerospace

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Difficulties Facing Italian Space Agency Discussed

92MI0667 Rome SPAZIO INFORMAZIONI in Italian
15-22 Jul 92 pp 2-7

[Text] One of the latest issues of SPAZIO INFORMAZIONI opened with a striking title: "ASI [Italian Space Agency] Four Years After: Is the Italian Space Sector Heading for a Crisis?" When it reached the desks of top representatives at the Ministry of University Education and Scientific and Technological Research (MURST), the ASI, and Italian space industries, Xerox and fax machines are said to have started working at full rate. The repercussions of that provocative article—which was based on facts that are well-known to many but often ignored—are still being felt. Meanwhile, there has been a drastic change at MURST: Prof. Sandro Fontana, a Christian Democrat has replaced the Socialist Antonio Ruberti as minister, while the Socialist Rossella Artoli becomes the new under-secretary replacing the Christian Democrat Sen. Learco Saporito, responsible for the space sector during his tenure. In addition, the term of office of top ASI representatives the president and director general, is scheduled to expire in about one year. When the possibility of placing the ASI under a provisional administrator emerged, underlying tension in Italy's major space companies become even more evident owing to their considerable financial exposure (there is talk of hundreds of billions of lire) for contracts concerning ongoing projects.

The above, however, will certainly not prevent SPAZIO INFORMAZIONI from making its modest contribution to greater clarity and transparency. Space experts know perfectly well that ASI's role in this sector, which is deemed to be strategically important for Italy's overall development, has been a much-debated subject at congresses, conferences, seminars, and round-table sessions over the past four years. The problems, however, remain unsolved. This is the context in which we have considered the indirect reply to our assertions made by ASI president, Prof. Luciano Guerriero, in an interview to a well-known Milan newspaper [CORRIERE DELLA SERA]. During the interview, published on 30 June, Prof. Guerriero also disclosed his position on his rumored resignation when he said: "The thought has never even crossed my mind." The article, however, also contains other statements that shed some light on the possible causes of difficulties and tensions currently being faced by the ASI. For the sake of integrity and in order to provide a full picture of the situation, such statements must be seen together with the opinions of other protagonists. Prof. Guerriero's statements will be followed by two short interviews given by ASI Director General Prof. Carlo Buongiorno and by Eng. Francesco Mazzucca, director of the MURST Space Office. Briefly the problem lies in clearly defining the ASI's role in managing Italian space activities and in assessing its willingness and ability to effectively carry out its tasks. Hence the dilemma: "ASI or no ASI: that is the question."

Guerriero's Statements

CORRIERE DELLA SERA: Why should the ASI appear to be in such a difficult situation when the law establishing it in 1988 appeared to guarantee a rosy future?

Guerriero: Because in Italy it is difficult to implement ideas that are too innovative. Legislators had worked to guarantee the flexible management required by this sector. The ASI was to have become a model for other government institutions. Instead, it took two years of negotiations with the appropriate ministries to obtain approval on personnel regulations and compliance with the traditional interpretations of employment contracts in the research sector are making it impossible to operate properly. Another issue which creates moments of panic and worry was the problem of employee positions since auditors had blocked the first resolution of the board of directors. These positions were then approved, but a more global assessment that takes due account of professional levels will be requested.

CORRIERE DELLA SERA: So, the personnel problems, which led to the protest have now been resolved?

Guerriero: Not yet, because the ASI will not be able to satisfy all the obligations of the programs until sufficient staff has been hired. Our request to the Ministry of Research has been rejected. We hope at least to receive authorization to recruit 150 employees as established by the law. We currently have only 80 people plus some secretarial staff; a mere handful. We need 400. For this reason our limited time is currently divided between managing programs and internal administration. Probably, if more time had been devoted to internal issues, Tethered would not be ready for launching. The staffing shortage is one of the major causes of the ASI's problems.

CORRIERE DELLA SERA: A large number of problems is said to originate from the fact that there are two space agencies in Italy: one being the ASI and the other the Ministry of Research.

Guerriero: Participation in the European Space Agency (ESA) is not as it should be. The law is very clear on this subject and had laid down that the ASI is in charge of participation while the Ministry of Research sets the lines the ASI will follow. Instead, the ministry has set up and staffed an office (the space office directed by Eng. Mazzucca, editor's note) to supervise relations with the ESA and to undertake commitments that the ASI is then asked to honor. Since management activities are carried out by two bodies, this weakens our position at the European level and creates internal difficulties when it comes to identifying responsibilities, with the risk of missing out on funding. A better definition of the ASI's role in the Italian Aerospace Research Center (CIRA) and the San Marco project is also needed if the law establishing the agency is to be respected.

CORRIERE DELLA SERA: How can today's problems be solved?

Guerriero: ASI has met with difficulties ever since its establishment: for this reason, we are proud of having nevertheless managed to promote Italian space research and industrial activities over the past few years. Problems do exist, but all it takes is a minor effort to resolve them. We should begin by leaving personal selfish attitudes aside in favor of a greater spirit of collaboration in the interest of the country. Second, certain aspects should be clarified but given their simple nature the solution can readily be found.

Buongiorno's Position

SPAZIO INFORMAZIONI: Specialized circles and the press have recently blamed the ASI for being slow in resolving long-standing problems such as those concerning its regulations. What is your opinion?

Buongiorno: I admit that there have been such accusations and, in a way, I believe they are warranted. Outsiders are amazed that the ASI has not devoted the same effort to speeding up the establishment of the organization as provided for under the law, as it has to developing programs. After four years, certain regulations have yet to be fully implemented. Obviously, this does not depend on the ASI entirely, but also on the fact that the establishment of this new body caused some reactions in all supervising ministries, including the Ministry of Public Affairs [as published], the Treasury, and MURST. The problem lay in the fact that this body was to be assimilated with similar bodies, which was no easy task. Nobody prevented ASI from going ahead. In fact everybody, in full compliance with the law, sought to solve this difficult problem.

SPAZIO INFORMAZIONI: Why has MURST failed to approve the ASI's 1992 budget?

Buongiorno: Perplexities at MURST arose following a well-founded comment made by the auditors. The National Space Plan provided for about 1.3 trillion lire in funding for 1992. The budget however, only granted 800 billion lire. Nevertheless, since we still had uncommitted funds, we tried to use all financial resources to honor new commitments. Therefore, we reprogrammed our major industrial contracts to calculate real expenditure for the current year and commit unspent funds. This operation was completed but entailed reapproving all contracts which had not been done when our budget was submitted. This is the real truth. Therefore, the auditors claimed that the operation was not a legitimate one. Furthermore, the profit and loss account had not been completed. Obviously, since the ASI has not hired the 70 people required to reach an initial group of 150 employees it does not have a fully staffed legal office yet. We do have our internal shortcomings, but I am confident in our ability to overcome this situation. Our staff, instead, is rather disillusioned. They thought that a solution to the problems of special payrolls and term contracts would soon be found. Great enthusiasm and dedication to the agency, however, still remains, as everybody is proud of his own work.

SPAZIO INFORMAZIONI: What do you think of the relationship between ASI and the MURST Space Office?

Buongiorno: I do not think that MURST is an obstacle to Italy's activities within the ESA. Whether the ministry or ASI represent Italian policy within the ESA is of little importance, provided such policy is actually carried out. However, I feel it is important for the ASI to contribute through its managers and board to the drafting of a document describing Italian space.

SPAZIO INFORMAZIONI: In conclusion, is the ASI undergoing a crisis or is it not?

Buongiorno: The ASI's crisis is due to its growing pains. The Tethered and Lageos-2 satellite launchers demonstrate our activity. The organization itself is important, too, but our task is to carry out programs and promote the technological development of industry. We are fulfilling this task. How we do it is another matter. We are indeed working under very difficult conditions, but we hope to come to an agreement with the ministries to quickly resolve this situation.

Mazzucca's Reply

SPAZIO INFORMAZIONI: Much has been said about the roles of MURST and the ASI in the planning and management of Italian space activities but this is often difficult to understand. What is your opinion?

Mazzucca: Obviously, rules are interpreted by human beings and there is always a dialectical relationship between ministries and the bodies they supervise and control. This dialectic, however, is of mutual benefit. There is some confusion on the issue of political directives in space activities. On the basis of the directives given by Minister Ruberti and Under-Secretary Saporito, MURST has been moving along three lines: 1) it gives directives on medium and long-term planning; 2) it leads all international negotiations, makes proposals, and sets forth objectives; 3) it controls the objectives reached by the ASI and oversees the ASI's administrative documents. Under the act that regulates MURST's organization, relations with ESA, ASI, CIRA, and the San Marco project are dealt with by a space office. Furthermore, a supervisory office controls the activities of the ASI, CNR [National Research Council], and INFN [National Institute of Nuclear Physics] from a legal and an administrative viewpoint. We must focus more attention on our relations with the ESA. Under the law, Italy is represented at ESA by the Minister for University Education and Scientific and Technological Research. However, given the complex nature of the problems, Italy's position at ESA level is defined during interministerial meetings that also see ASI representatives participating. Italy's position is then illustrated to ESA partners by the Italian delegation currently headed by Prof. Guerriero. An important element comes into play here. The articles of incorporation of the ASI do not state that the ASI president must head the delegation, but that Italy must be represented by the Minister for University Education and Scientific and Technological

Research, who may delegate the task. For a series of understandable reasons, since the ASI is MURST's operational arm, Minister Ruberti decided to delegate Prof. Guerriero. This means that the ASI president acts on behalf of the minister as his delegate. Understandably, however, Prof. Guerriero provides a slightly different interpretation when he says: "As ASI president, I must head the delegation." Nevertheless, the ministry disagreed with Prof. Guerriero's interpretation and since it is the MURST that gives the directives, Guerriero, as the head of the delegation, must comply with them.

SPAZIO INFORMAZIONI: But Prof. Guerriero blames the MURST, and more specifically your office for having accepted ESA commitments that the ASI is then asked to honor.

Mazzucca: At the ESA, Italy does not accept a commitment with a simple handshake! Programs are only adhered to after a deliberation has been made by the ASI board of directors, which is responsible for the ASI budget. Such deliberation must then be communicated to the Ministry of University Education and Scientific and Technological Research, which then undertakes to accept the commitment with ESA after having verified whether or not the program or activity had been envisaged in the lines approved by CIPE [Interministerial Committee for Economic Planning]. MURST cannot possibly supplant the ASI in a decision that is binding for the whole country. Far from it. We can urge the ASI to express its opinion because we feel that the ASI has a certain priority over certain activities. Then, when the delegation goes to ESA meetings disagreements may arise but, as far as I know, the delegation normally represents the line that has been agreed upon in previous interministerial meetings. The Italian delegation is very well represented in certain ESA committees, while it needs strengthening in others. In practice, however, delegation members interact with ESA directors on a daily basis and, when people know each other well, dialog is obviously easier. Therefore, situations may arise in which an ESA director has an operational conversation with somebody from MURST or the Treasury and then obviously, when Italy's position is being defined, we already have some indications on the ESA's position. I do understand that such situations may be annoying, but they are occurring because, as Prof. Guerriero himself has admitted, the ASI is still understaffed and is therefore unable to adequately cover all activities. This fear of being excluded would not exist if the ASI had a dedicated full-time staff. In my opinion, the current situation is the result of a general tension that is also felt within the ESA, the United States, and in Russia. The ASI is undoubtedly experiencing problems that are not due to anybody in particular, and certainly not to the MURST. Even though they may not be pathological, they contribute to causing great tension. Often, Italy, tends to look outside for the internal causes of its own problems.

SPAZIO INFORMAZIONI: Recently, MURST dealt two big blows to the ASI, one on the budget and the other on personnel regulations. What do you think about that?

Mazzucca: I would like to give my own personal interpretation. I attended the installation of the ASI board of directors on 24 August 1988 together with Minister Ruberti and Under-Secretary Saporito. On that occasion, Minister Ruberti mentioned the very issue of personnel regulations, when he said: "Do not try to draft perfect regulations, because this is not possible. Complete your regulations within two to three months to be able to start working, and leave the fine-tuning for a later stage." My interpretation, therefore, is that after no less than four years, the Minister of Research noted that a series of issues were still outstanding and accordingly urged the ASI to solve at least these two problems: the way in which its budget is to be managed and organized and the way in which its personnel must be hired.

SPAZIO INFORMAZIONI: And yet, ASI seems to have made some real blunders in this difficult situation.

Mazzucca: When trying to meet too many different requirements, solutions tend to be highly criticized and satisfy no one. In a way, the ASI's eagerness to reach a general consensus is to be appreciated, though this was probably not achieved. The proposed solution, however, satisfies no one given its attempt to meet so many different requirements. In my opinion, MURST and ASI must be made to work more effectively. Let us forget past mistakes. A positive attitude is required and ASI must be made to work better. The ASI was only established in 1988 and, in my opinion, we can still lubricate its "machinery" and make it work at full capacity because we have incredible commitments with the ESA and the United States that we must honor.

Germany's Aerospace Industry's Problems, Progress

*92WS0763A Bonn WEHRTECHNIK in German
Jun 92 pp 17-21*

[Article by Erhard Heckmann: "German Aerospace Industry: Sky Isn't Blue Everywhere"]

[Text] The German aerospace industry differs from those of the other industrialized countries in that it is internationally integrated to an even greater extent than they are. There are historical reasons for this. The breakup of the industry after World War II and the suspension during the following 10 years of any activity in this field today still have visible effects on the lack of leadership in German system-engineering firms in major programs.

German Aerospace (DASA) has taken it upon itself to remedy this shortcoming since the immense need for capital and the lengthy commitment of capital also require firms with large amounts of capital at their disposal. In the meantime, the Federal Cartel Office has hopefully learned this. This must not be a call for a

relapse into a national economy way of thinking, but even in this united Europe national structures are being retained.

During the past few years the German aerospace industry has not done badly for itself. During the period from 1978 to 1988 the average growth rate of its business turnover came to 13.4 percent. In the process, it topped all other industrial groups in Germany.

We might now assume that the future of this industry would be trouble-free since we read so many good things about the Airbus and that losses in the military aviation sector are being compensated for by the successes of this commercial aircraft.

But this is just not so since the phasing out of the Tornado program and delays with the PAH-2, K-20, NH-90, and the successor to the F4 coincide with a slack period in the civil aviation sector.

The airlines—the customers of the aircraft manufacturers—have taken on too much in this period of deregulated competition. The economic situation has worsened everywhere in the world; only we in the Federal Republic will feel it later thanks to the special situation with regard to eastern Germany. The airlines, to be sure, are flying farther, but are not earning anything and, consequently, are not investing. The anticipated increases in volume have not been attained, options are not being turned into sales, the used aircraft market is dead. And even Lufthansa, which used to be able to resell its outdated aircraft at introductory prices, can find no buyers and has to park aircraft in Arizona—naturally for a fee.

In the last seven months 105 Airbuses have been delivered as against only 21 new orders and the backlog of orders dropped from 992 in August 1991 to 909 by the end of March 1992. Up to now, such a situation did not make the headlines because new sales, but no cancellations, were constantly reported.

This does not yet mean a catastrophe in which the whole program might run into trouble since, first of all, it is a long-term program—as it already was in the past—which counts on an annual increase in air traffic volume of 5 percent and, secondly, no customer orders an aircraft if he has to wait five or more years for delivery.

Programs that are being phased out and economic difficulties experienced by aircraft owners negatively affect the equipment industry first. A system-engineering firm needs the components long before the aircraft is delivered and the customer pays for it. This cash flow situation is further amplified if the aircraft owner reduces his inventory of spare parts or retires part of his fleet in times of crisis. The equipment industry is in addition particularly placed at a disadvantage by the new export regulations since everything it produces is "dual use."

A Few Estimated Figures

The following figures are for 1990 since the association does not yet have the figures for 1991. By way of example, the DASA balance sheet conference is not held before early June.

In 1990 the German aerospace industry had 95,000 employees and attained a total sales volume of DM25.4 billion.

Divided into manufacturer groups, Manufacturer Group 1 (system-engineering firms) has 56,000 employees, an increase of about 6 percent as against 1989. The increase amounted to as much as 11.6 percent in the engine industry (Manufacturer Group 2) with 9,253 employees. The equipment industry took a downturn, specifically from 30,000 to 26,400, while the materials industry remained almost unchanged with about 3,400.

The number of employees in the military aviation industry decreased by about 3.2 percent, while an increase of 8.4 percent was recorded in the civil aviation industry. There was an increase of about 8.2 percent in the space industry and a drop of about 24.8 percent in the so-called foreign production sector.

The changes in turnover more or less correspond to the changes in numbers of employees. System-engineering firms reported an increase of about 6.5 percent from DM14.3 billion to DM15.2 billion and the engine industry about 9.8 percent from DM1.7 billion to DM2.05 billion. The effects of more efficient operation are especially noticeable in connection with this.

A drop of about 6.2 percent from DM7.7 billion to DM7.23 billion was recorded in the equipment industry and the turnover in the materials industry rose by about 17.6 percent from DM742.8 million to DM873.2 million.

Why is the equipment industry going downhill? The reason lies in the phasing out of the big programs since the equipment manufacturers deliver to the system-engineering firms about two years before the latter deliver to their customers. Subsequent major programs have not yet been set in motion, but they will incur their own expenditures when they are developed.

Firms and Groups

This matter is not to be dealt with here in all its details, but rather in overall terms. In doing so, however, it appears to be important to single out a few points:

The restructuring of the German aerospace industry is characterized by:

- Consolidation of DASA under the command of Daimler-Benz,
- BMW's reentry into this industrial sector,
- Establishment of the Bremen Technology Group by Atlas Electronics and STN [Northern System Engineering GmbH] and, independently of it, the creation of DST out of the Philips legacy.

German Aerospace

In the case of Daimler-Benz, the term structuring of the German aerospace industry is only partially applicable because of the step it is taking from an automobile manufacturer to a technology combine. Therefore, we are only concerned with the field of German aerospace. In terms of this, the following becomes apparent:

- Increasing Europeanization through the exclusion of MBB's [Messerschmitt-Boelkow-Blohm] helicopter division from Eurocopter.
- The planned founding of Regio-Liner with Alenia and Aerospatiale as well as Fokker's possible takeover of a majority share in the enterprise.
- Now clearly identifiable in outline, the organizing of the space and defense technology divisions.
- The downgrading of the military aviation sector to the third management level, probably as a precaution in the event that the EFA [European fighter aircraft] program fails.

DASA's structure still suffers from the concessions to Dornier's affiliated partners in the takeover agreement, which are difficult to reconcile with the original planning goals.

Adjustments between individuals and organizational structures characterize the present situation. Dr. Johann Schaeffler is also taking over the defense and civil systems division in addition to aviation as responsibilities of the board. He is to be supported in his responsibilities for aviation by Hartmut Mehdorn, the president of German Airbus. He is to be promoted to acting member of the board at DASA. Hans Ambos is taking over the technology division under Schaeffler. Dr. Wolfgang Priller is taking over the department of industrial development and organization and cooperation policy as DASA's general representative. Likewise, Ludwig Kathrein, the head of the defense and protection product division, will be the general representative for general coordination in the defense and civil systems division. Noteworthy is the promotion of Hartmut Mehdorn, whose German Airbus in Hamburg is now, after the 321, also taking over the final assembly and responsibility for the little 319.

DASA has, as it were, assumed a leading role in the European aerospace industry's strategy since the prospects for the French industry are suffering from the government's poor ability to act, in Italy battles over holdings and party strife are not over yet, and in Great Britain, while it is true that they have reorganized, they are not being led.

BMW-Rolls Royce Aero Engines

BMW's reentry into the field of aero engines together with its partner, Rolls Royce, was really a surprise. Moreover, there was the BR700 family of engines' early claim to system-engineering leadership, the BR700 a

class in which MTU [Motoren- und Turbinen-Union] was planning something similar.

About 1,100 workers are employed at the former KHD [Kloeckner-Humboldt-Dietz] engine-manufacturing company in Oberursel, Munich-Lohhof, and Bristol. Talks with MTU, which were conducted at top company level, have broken down, even though the Ministry of Economy had made it clear that there would be no funds for the development of two competing engines. The negotiations fell through because of both sides' claim to system-engineering leadership. BMW-Rolls Royce is engaged in talks with other firms, also American, regarding later-assembly-line production. Rolls Royce has provided Oberursel with a few work packages for the production of civil aircraft engine components (TRENT).

Construction of a new development and testing center as well as an assembly plant for the new family of BR700s has begun in Dahlewitz, 30 km south of Berlin. The amount invested there is expected to come to DM400 million.

MTU

If a few more lines are devoted to MTU, it is because of the above-described competition situation and the fact that the first figures on its activities are available to us.

The MTU group's (Munich and Friedrichshafen) turnover dropped slightly from DM3.65 billion to DM3.56 billion between 1990 and 1991 while its rate of exports rose from 65 to 68 percent. The volume of orders it received rose from DM3 to DM3.2 billion. The number of workers employed dropped from 17,524 to 17,052. A turnover of DM1.8 billion (1990 = DM1.7 billion) for aircraft engines (Munich) is estimated for 1992.

Due to the decreasing demand for military engines—this applies to both aircraft engines and diesel engines—it is estimated that there will be an increase in the demand for engines for civilian use. At MTU these are, on the one hand, engines for commercial aircraft and, in the case of the MTU plant in Friedrichshafen, high-speed diesel engines to meet a growing demand for rapid ferries, railroad engines, and for use in energy technology.

MTU is first in the world in the production of engines for armored vehicles. The foreseeable declining demand and the need for funds for a new generation of diesel engines has led to the idea of a Euroengine Company in which the firms SACM Pielstick (a joint subsidiary of MAN [Augsburg-Neurnberg Machinery Factory] and MTU), Fiat-Iveco, and Rolls Royce could participate.

The former NVA's [National People's Army (GDR)] engine-repair plant, the aeronautical engineering division in Ludwigsfelde—originally established on the grounds of the Daimler-Benz Engine Plant in Genshagen—was taken over by MTU on 1 July 1991 and its name changed to the MTU Engine and Turbine Union. About 400 workers are at present employed there. In the

aircraft engine sector MTU develops major components for many types of engines and operates in conjunction with practically all the big engine manufacturers. While it is true that this has not led to any system-engineering leadership, MTU can apparently do quite well for itself.

It is striving for leadership in system engineering with the RTF180 (regional turbofan, 18,000 lbs.).

International Relations of German Aerospace Industry

92WS0763B Frankfurt/Main SOLDAT UND
TECHNIK in German Jun 92 pp 377-382

[Article by Wolfgang Flume: "German Aerospace Industry Becoming More International"]

[Text] After 32 years at Hannover-Langenhagen Airport, the International Aerospace Show (ILA)—the location was never really liked, they merely more or less put up with it in the end—is making a fresh start this year in Berlin-Schoenefeld. "ILA '92 Berlin Brandenburg"—an aviation show which, as a mediator between West and East, is a good point of departure, was advertised worldwide with this slogan. We can only hope that the opportunities are being exploited and that ILA '92 will be successful in terms of how it is organized as well as financially. At least as far as the number of spectators is concerned, there should be no cause for concern. The presentation of the most up-to-date civil and military equipment, especially Russian as well, is and will continue to be a spectator attraction, particularly for the citizens of Eastern Germany and Eastern Europe, who are not used to high-tech aerospace expositions. Naturally, the proximity of metropolitan Berlin is an additional attraction.

So the ILA may soon be referred to as being in the ranks of the important big European expositions in Paris and Farnborough. However, another aviation show (for the moment as a smaller engine show) is to be held in Moscow in August. Then, as of August 1993, as Moscow Aerospace, it is expected to be the showcase of the very big, still too heavily military-oriented aerospace industries of Russia and other CIS states, which are facing serious problems. As such, they will in general be afforded opportunities in the longer run.

Too Many Aviation Shows?

But four big international aviation shows in Europe at a rate of every two years is just too much of a good thing. So, especially as concerns us Germans, the proposal will again be raised to organize only one big show a year. What the German Aerospace and Equipment Industry Federation (BDLI) did not succeed in doing as early as a few years ago, namely organizing shows alternately in Paris, Farnborough, and Hannover in three-year rotation cycles, it will probably not really succeed in doing now with four shows. To be sure, everyone is talking about Europe, and a real common market is just around the corner, but as long as aviation shows—at least those

held in France and Great Britain—produce a sizable financial profit as well as gaining prestige for their organizers, those countries will have little inclination to enter into new arrangements.

Cooperation in the field of aviation has, of course, been pursued for years—in part even very intensively—especially in Europe; nevertheless, the aviation industry has not yet been able to rid itself of thinking in terms of national prestige. The farther back this goes, the more a not always understandable company or personal prestige comes into play in one or another instance, based on the principle: I want to be the biggest. It is obvious that this makes any economic cooperation difficult, if it does not occasionally prevent it.

Reorganization at DASA

During the past few years most of the aerospace industry in Germany has come under the wing of Daimler-Benz—from the former firms: AEG [General Electric Company] (that is, Telefunken System Technology, TST), Dornier, MBB [Messerschmitt-Boelkow-Blohm], and MTU [Motoren- und Turbinen-Union]—but it takes a lot of money and almost even more time to forge a really powerful, profitable company out of a single casting. And not even the Daimler combine wants to completely succeed in doing so for the most varied of reasons. With Dornier it is the old partners who—thanks to them—do not want to let Dornier's good name be destroyed, but who are overshooting the mark in the process (because, naturally, the money they dearly love is involved). So Dornier will no doubt continue to be a company and will concentrate on space technology (but it will probably not include the entire space spectrum covered by German Aerospace (DASA)). MTU, too, will continue to be retained as a company since it is also striving for closer integration of capital with the American engine manufacturer, Pratt & Whitney. On the other hand, MBB and TST are now to merge to form a single company—its new old name: DASA. DASA's present holding-company function would then be assumed by a Daimler-Benz Aerospace Holding Company, for which an acronym has already been designated: DALURA. German Airbus, which has recently been turning a profit, could also be fully integrated into it perhaps as soon as next year.

This would at the same time also open the way to foreign participation in the DALURA subsidiaries. In connection with which the name, Daimler-Benz, represents the fact that this combine wants to retain majority holdings in the [constituent] firms and thereby the final say, except when it comes to firm designs like those involved in the helicopter division. In connection with this field, MBB as well as the French firm, Aerospatiale, have incorporated all of their helicopter operations in the new firm, Eurocopter—with a majority holding for the by far larger Aerospatiale in the helicopter division.

Airbus and Regional Aircraft

The development and production of the Airbus family really offer us an opportunity to establish a truly international company. All of DASA, Aerospatiale, British Aerospace, and the Spanish CASA's [Spanish Aircraft Manufacturing, Inc.] civil aircraft production operations could be incorporated in it—unless each of the companies conducts other civil aircraft operations, aside from Airbus, that compete with the partner firms:

- The DASA 20- to 30-seater DO-228 and the Dornier 328 (and the desire to take over the leadership of the industry with a new commercial aircraft with from 80 to 100 seats that is in the planning),
- Together with the Italian company, Alenia, Aerospatiale has the very successful 40-to-70-seater ATR-42 or ATR-72,
- British Aerospace has a 70- to 100-seater, and
- CASA also has a 20- to 30-seater.

For a long time it looked as though DASA, Aerospatiale, and Alenia would achieve a viable working relationship in the smaller civil aircraft market and that DASA would maintain its leadership with the above-mentioned 100-seater. But now that DASA is seriously talking about joining the Dutch firm, Fokker (which has the 50-seater F-50 and the 100-seater F-100 in production), the cards will probably be dealt. If DASA should become a majority stockholder in Fokker (merged in the 1970s with the Bremen firm, United Aeronautical Works (VFW), which later merged with MBB in a union that failed after a few years), it would finally have the leading role in an important market segment in civil aircraft production that Daimler president Reuter, in particular, has striven for and it would not necessarily have to immediately develop a new 100-seater. But which, on the other hand, does not exactly make cooperation with Aerospatiale and Alenia a simple matter. And it does not guarantee the absolute economic success that the combine so much hopes for the Dornier 328, which is now being flight tested, (which would in turn compete with the ATR-42 in an expanded version) either.

The competition for the planned 100-seater—which had its origin in the defunct German-Chinese project for the MPC-75, a 75-seater—will be complicated by the decision reached in early May by the Airbus industry to also develop a kind of 100-seater as an A319 (for up to 130 passengers) from the successful A320 and, of course—as with the A321—do it without state aid. A very sensible solution since an experienced marketing team is already here for the purpose—the most important prerequisite for the economic success of a program. The A319 (the final assembly will be in Hamburg, as with the A321 as an expanded version of the A320) is in a way a competitor of the F-100, that is, of the planned DASA 100-seater.

Not even the participants really know at the present time how the competition for the above-mentioned 100-seater—sometimes also known as the Regioliner of

DAA-92—will turn out. Perhaps DASA will develop a 70-seater jet from the F-100 after a Fokker takeover and postpone development of a 100-seater for several years until the F-100 can no longer be marketed.

The industrial situation for a commercial aircraft that can carry from 600 to 1,000 passengers or even a super or hypersonic aircraft for from 400 to 600 passengers is just as uncertain. Whether the Americans or the Europeans will realize these projects on their own, possibly still in competition with one another, is more than questionable because of the very high cost of developing and the nevertheless limited market for these kinds of sub and supersonic giant jumbos. This would offer an opportunity for cooperation that would span the globe through the inclusion of Russia and Japan. The first steps toward a "global approach" have already been taken, but all aspects of a supersonic commercial aircraft will be jointly investigated by American, European, and Japanese firms in studies, from the technologies to be applied to cost effectiveness to effects on the environment, which are becoming increasingly more important (emissions at high altitudes, noise drag, etc.).

In any case, Russia and Japan should be more actively included in cooperation—the points of departure are already there: "to integrate Russia into the European aviation industry to some extent." This could be a kind of lifesaver for the overly large industrial capacities in Russia (and other CIS states, Ukraine, for example) that have hitherto been predominantly fully occupied with production for the military.

Engines: Cooperation and Competition

International cooperation is also the dominant theme in the engine sector. DASA subsidiary MTU may be described as being extremely cooperative. To break loose from its too heavy dependence on military orders, several years ago the firm entered into cooperative ventures with the two American engine manufacturers, General Electric and Pratt & Whitney, involving certain types of engines in the development and production of which MTU each time participated to the extent of about 10 percent. While it looked like a closer merger with General Electric at first, now, in accordance with Daimler's wishes, they intend to enter into a closer connection with Pratt & Whitney (a subsidiary of the American combine, United Technology) with mutual integration of capital (but which almost gives the impression of a marriage between a mouse and an elephant given the extreme difference in size between the two engine manufacturers).

True, it sounds almost anachronistic, but there is competition in the engine industry in Germany again! Almost as a reaction to Daimler-Benz's (re)entry into the field of aviation, its competitor, BMW, has shown its muscles by acquiring the KHD [Kloekner-Humboldt-Deutz] aviation technology division, specializing in small engines, in Oberursel and introducing it in the BMW-Rolls Royce Company (BMW—50.5 percent,

RR—49.5 percent). This company is pursuing very ambitious goals, for example, the development of a modern family of engines (for the above-mentioned 100-seater, among others). And this in direct competition with an MTU and Pratt & Whitney project. Both German firms have applied for state development subsidies—from the start, it was clear that the Ministry of Economy could not help both of them. But it was no doubt unclear to the firms. The result: They sat down at a table [to negotiate], but it did not (yet) end in a merger between MTU and BMW-Rolls Royce since Daimler-Benz wants—how could it be otherwise—to retain a majority holding in and industrial control over MTU, while BMW would like to hold at least a 50-percent share in it. But, in addition, BMW feels that it is one of MTU's "fathers." Resumed after the war, the Bavarians' aircraft engine activities were taken over by MAN [Augsburg-Nuernberg Machine Factory, Inc.] in the mid-1960s and incorporated into the then newly-founded MTU in 1969.

Together with Pratt & Whitney, the Italian FiatAvio, and the Japanese JAEC [Atomic Energy Commission of Japan], MTU also has a connection with Rolls Royce, if only involving the big IAE V2500 engine, which has gotten off to a somewhat difficult start in the market. Far more successful is the connection between the French SNECMA [National Aircraft Engine Research and Manufacturing Company] and General Electric with their best-seller CFM-56 engine family. The French are more disposed to playing the Europe card, a tendency still too little pronounced.

Military Aircraft Production

The situation with international cooperative ventures involving military aircraft, rockets, and engines, on the other hand, takes on a quite different appearance. With regard to them, firms organize themselves largely in terms of which governments are jointly developing and producing which aircraft or guided missile program. So there are all possible configurations of firms—it is somehow practical for each firm to join with the others in one or another weapons program—but at the same time also those that are competitors on other projects.

In Germany, all airframe and engine production capacities are now in the military aircraft production sector in DASA under the aegis of Daimler, if we omit from consideration minor exceptions: System Engineering North (formerly MBB Bremen) is developing drones and Grob, the EGRETT, (LAPAS) high-altitude reconnaissance aircraft.

A paramount issue is and continues to be—not for DASA, as the leading system-engineering firm, but rather more so for the fragmented German equipment industry—the question as to the future fighter aircraft for the air force. Is Fighter 90 (that is, the European fighter aircraft (EFA)) in the offing or not? If it were a matter of exclusively objective technical arguments, procurement of the EFA would be undisputed. But unfortunately, there has been so much talk about this plan

among politicians and every possible alternative has been proposed and investigated for the umpteenth time with great expenditure of time, money, and energy to in the end arrive at the only correct solution for reasons of allied policy alone, namely the EFA. There are certainly at first glance more cost effective alternatives, but these are also less efficient or—for example, the MiG-29—are technologically so obsolete that they cannot remain in operation beyond the year 2020, as is planned for the EFA. The EFA is, without a doubt, the more economical solution in the long run.

But even if the EFA is procured, the industry will not be rid of all its worries since the number of aircraft procured will be far fewer than the 250 planned by the air force. Moreover, Germany's share of the entire program is smaller and the aircraft itself is also smaller. Therefore, the production capacities developed with the "Tornado" program cannot be fully utilized. Especially since final assembly of the "Tornado" in Manching was phased out at the start of the year, a gap in production has opened up since the EFA will not be operational for several years. It is lucky for the industry that Airbus production has to a certain extent compensated for this.

Things already look better in the helicopter sector, that is, at Eurocopter: It has a German-French development program with its antitank helicopter 2, "Tiger," and a German-French-Italian-Dutch one with its NH-90 transport helicopter on the premises, and the later production of both types appears to be certain, although with a reduced number of helicopters.

The air force is very concerned—and this not only recently—over the arming of its combat aircraft. Since there is no German national development program for intermediate-range air-to-air missiles and no participation in a multinational program, German fighter aircraft—at first the F-4F, whose combat effectiveness has been upgraded, and later its successors—will have to be armed with an American missile again, the AMRAAM [Advanced Medium-Range Air-to-Air Missile]. The German industry will at best participate in this program through compensatory orders that will probably not exactly involve the technologically most demanding components of the missile. The situation is also unsatisfactory with the short-range air-to-air guided missiles. There is no doubt that the AIM-9L "Sidewinder" is obsolete and will have to be replaced soon. Production capacities and know-how for the development of a successor to the AIM-9L would be amply available in the German industry, especially at the BGT [Bodenseewerk Geräte Technik] plant on Lake Constance. Defense Ministry plans do not, however, reveal whether development of a state-of-the-art infrared-controlled guided missile that has to have the performance characteristics of the ASRAAM [Advanced Short-Range Air-to-Air Missile] project, which was discontinued in 1988, is soon to be resumed again.

The arming of the German fighter-bomber is also indisputably in need of improvement. It must be questioned

whether the MW-1, the currently standard armament for the "Tornado," still meets all tactical-operational requirements. Since the "vertical aircraft armament" (VBW) development program had to be discontinued about two years ago because of the cost and following intervention by the Federal Accounting Office, the Air Force's hopes now rest on the "modular interval weapon" (MAW). For this—if it finally gets off the ground—the German industry could count on sizable high-tech orders, even if we here shore ourselves up with the French Apache.

As concerns ground-launched air-defense-weapons systems, the biggest plan for the future is the tactical air-defense system (TLVS), the successor to the Hawk. With respect to this, a decision is still to be made by the government on which partner it wants to develop it with: the United States, which has up to now been our partner for ground-controlled air-defense systems (Hawk and Patriot), or the French and Italians, who have already taken the first steps in developing them with the SAAM [Surface-to-Air Anti-Missile]/SAMP [Surface-to-Air Missile Platform] system.

Nasty Business: Arms Exports

There is one aspect of international community plans—and for the present these involve all of the larger arms projects—that is becoming increasingly more important for the German aerospace industry: The ever more stringent, at times incomprehensible federal government regulations governing arms exports apply to them only in part since our partners, France and Great Britain in particular, are operating under far more liberal conditions in connection with this. Both of these countries will certainly not entirely assume the very restrictive position of the German government in European-controlled arms export regulations (which are absolutely necessary in a common market), especially desired by the German industry. Thus, European regulation can only be more liberal for the German industry. But until that happens, the German industry is at an enormous disadvantage. Thus, because of this export handicap, it is already largely excluded from Community development programs financed by firms. Since who would seek out a partner, or even just a supplier, whose government will later prevent the exporting of his products?

Space—Who's Going To Pay for It?

Meanwhile, this has had a sobering effect on not only the military technology industry, but also in the space sector—once regarded by many as a civilian employment alternative to the military technology industry with a promising future—the industry has come round to a more realistic way of looking at its chances for the future. It is true that there are no conspicuous breakthroughs in terms of orders for commercial satellites for communications and environmental protection purposes—however, the manned space programs situation looks critical. With them the Ministry for Research and Technology (BMFT) would get itself into colossal financial

difficulties if the consistently long-term programs: "Ariane 5" (rocket), "Hermes" (space transporter), and "Columbus" (free-flying platform), had to be implemented as originally planned. The rates of increase (+ 2.5 percent annually) of BMFT medium-range finance planning are too low to accommodate price escalations of over 5 percent annually in the European Space Agency (ESA) budget and the share of the BMFT budget allocated for space programs must not be increased beyond 20 percent either. Furthermore, the initial cost estimates for these space programs—determined on the basis of the not yet accurately foreseeable expenditures for the development of new technologies—were set too low. This is why ways of cutting costs are being feverishly sought—but whether a conclusive new concept can be adopted as early as at the next ministerial conference in the fall in Spain is very doubtful. "Ariane 5," "Hermes," and "Columbus" are, it is true, purely European projects, but "Columbus" (which Germany is managing because it is saddled with the lion's share of the financing) is expected to dock with the American "Freedom" space station. If the Europeans were to discontinue "Columbus," the United States would naturally be very annoyed but, on the other hand, no one knows whether "Freedom" will really be implemented by NASA.

To rid themselves of their financial problems, it would be advisable for the Europeans to be on the lookout for additional partners. Japan would really be an ideal partner and is considered to be extremely powerful, but—very ambitious—it wants to get something started on its own. Therefore, there appears to be little promise of success for full cooperation with Japan on this.

With its huge production capacities, Russia would doubtless be a natural partner. It is still very uncertain how things will go on in the space industry, certainly not on the scale they have up to now, but only on a smaller scale. Thus in Western Europe they are already thinking about a kind of financial aid for the space sector in Russia, for one thing, to maintain technological standards there and, for another—and especially—to retain some of the scientists, but also to make use of the know-how there for a pan-European space program. On the other hand, every project that is transferred to the Russians to work on or that is taken over by them there will further reduce full employment in the western European space industry. So then it could lead to personnel layoffs that even exceed the already foreseeable number.

So there is a more global way of looking at things in the space industry too and with it the number-one priority is cooperation that spans the globe. But for this to happen, the financing problems in all states have to become far more critical.

This article was to be supplemented with a detailed list of German aerospace firms' international cooperative ventures. Either the questionnaire was too detailed or the public relations departments of the firms we

approached were too busy with preparations for the ILA. In any event, the number of returns that reached us in time were too few for us to compose a comprehensive overview of cooperative ventures. Therefore, this survey will be completed in an issue of this journal to be published after the ILA.

Results of French Aerospace Firms in 1991 Viewed

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["French Air and Space Industry: Preliminary Data"]

[Text] *Since many companies still do not have their closing yearly balances at hand at the onset of the new year, the French air and space industrial group GIFAS, the French sister of BDLI [German Federal Association of Air and Space Industries], which has a total of 207 member companies, reported data for 85 companies, representing 95 percent of the industry's total turnover. Strictly speaking, the figures for 1991 must therefore be taken only as estimates.*

The French air and space industry employs some 120,000 workers. Yearly turnover showed a slight gain attributable to the aircraft, missile, and engine sectors; the armaments sector, on the other hand, showed a decline in turnover.

Compared with orders amounting to 121 billion French francs [Fr] in 1988, Fr146 billion in 1989, and Fr132 billion in 1990, the turnover in 1991 came to a moderate Fr119.9 billion. Since the processing time for aviation equipment is 18 to 24 months, the turnover should have been in the order of Fr130 billion. The reasons for the fall-off are:

- The decline in the value of the U.S. dollar, which, when payments were due between January 1989 and 31 December 1991, had already lost some 15% of its value.
- A drop in production because of the cancellation of foreign military orders during the Gulf War and a decline in military orders from the French armed forces. The producers were most affected by this situation because fewer replacement parts had been ordered due to the lull in civil aviation. Airline companies had reduced their replacement parts inventory because of financial difficulties, and had either stretched orders out over a longer time frame or canceled them completely.

The trend towards the civilian sector taking a larger share of the market has been observed for the past five years. It now occupies 52 percent as compared with 48 percent in 1990. What is noteworthy is that, for the first time, the civilian share increased at the expense of the military share, which fell 6 percent in value and 9 percent in volume.

Exports

The export of civilian and military products from the air and space industry is of vital interest to the French economy.

Unlike the American competition and even vis-a-vis developing areas like Brazil and Southeast Asia, the French domestic market will never be in a position to absorb the R&D costs needed to produce modern products. Even the number of items produced is insufficient to achieve lower prices through weapons production.

Exports sank from Fr55.658 billion in 1990 to Fr55.04 billion in 1991, constituting a reduction of 4.3 percent. Military hardware exports, which fell 33 percent, were mainly responsible.

Considering the lack of important military orders in recent years, this is not a surprising situation. The underlying cause of this is the general international trend to disarmament and the strengthening of the North American position in the Gulf states. This general situation is not expected to change in the near future.

Despite strong American competition, it was possible to win additional export markets for civilian goods. From 1990 to 1991, the income from civilian exports increased 24 percent, primarily through the sale of AIRBUS, FALCON, ATR, ARIANE, helicopters, satellites, and CFM engines. To be sure, these favorable results are traced to the unusually high number of orders received in 1988 and 1989.

Orders Booked

Incoming orders in 1991 fell almost 30 percent to Fr93 billion, compared with Fr132 billion in 1990. Presently, the decline in orders in the domestic market is estimated at 25 percent, while the drop-off in exports is put at 34 percent. Orders for civilian goods have fallen 38 percent, while military orders have retreated by 21 percent.

In 1991, many airlines made earlier orders retroactive, so that the inventory of total orders declined to 1.96 of annual turnover, as compared to 2.16 annual turnover on 31 December 1990.

Measures

To maintain their competitiveness, the producers have undertaken to:

- increase productivity
- align the companies to the mid-term demand (multi-year social plans and training programs).

In 1991, the number of employees will be reduced 2 percent, followed by a further reduction of 5 percent in the event the market situation has not changed in 1992.

Going beyond just the air and space industry, and including the armaments industry, orders for military hardware in 1991 amounted to between Fr30 and Fr38 billion—or about equal to the 1990 total. This amount,

of course, includes the six frigates built for Taiwan, amounting to Fr15 billion. Orders booked in 1990 (Fr33.4 billion) were 70 percent higher than in 1989.

Aerospatiale

In 1991, the Aerospatiale group was able to increase its turnover by 16 percent, namely, from Fr41.8 billion to Fr48.6 billion. In the four years since 1987, there has been an average annual increase of 11 percent.

The turnover in aircraft sales reached Fr21.3 billion, or 44 percent of the total turnover, followed by Fr9.5 billion, or 20 percent of the turnover for helicopters. The turnovers in strategic missiles and civilian space projects remained stable, while the Fr5.3 billion turnover in missiles represented a decline of more than 20 percent.

Last year the export share climbed from 60 percent to 65 percent, but the amount of orders booked dropped 50 percent to Fr35 billion.

The current inventory of orders ensures full activity for two and a half years, and the aircraft production three to four years. The cancellation of the strategic S-45 missile had such a pronounced effect that the share of civilian space activities rose to 60 percent of the total space turnover.

The costs for research, development, and production start-up climbed to Fr14.3 billion, as compared with Fr13.4 billion in 1990. It is estimated that the net profit in 1991 will be Fr213 million, as compared with a loss of Fr396 million in 1990. Of special interest for business year 1991 is the founding of Eurocopter and Euro Hermes Space.

The goal for 1994 is for the turnover to rise 30 percent to Fr49 billion, of which 85 percent will accrue to European programs and 70 percent to civilian activities.

Dassault Electronique

Electronique Marcel Dassault, whose name was changed to Electronique Serge Dassault in 1982 and to Dassault Electronique in 1990, was established when the electronics division separated from Avions Marcel Dassault. With a starting capital of Fr377 million, the turnover in 1991 reached Fr3.9 billion, with a backlog of orders amounting to Fr7.75 billion.

The company develops electronic instruments, software and data processing systems for military, space, and civilian applications. Among its many products are missile search heads, radars (airborne and ground), digital systems, electronic warfare devices, surveillance and command systems, target-tracking units, testing instruments, and microelectronic components (ASICs).

Marconi Defense Systems cooperates in the development of search heads, one example of which is the search head for the air-to-air Matra MICA missile. Since 1989, Hewlett-Packard of the United States has cooperated in the field of antenna and radar reflection cross-sectional

measurements. GEC Marconi and Alenia cooperate in the field of radar search heads for missiles and drones. In this regard, the search for ASTER and 4A must be mentioned. TST assists in the development of the ANS search head. Thomson-CSF has jointly worked in the development of detectors, including the RAFALE radar RBE-2. GEC Ferranti Defence assists in the CLARA multifunctional laser container project, and Dassault Aviation has specified the LANE mapping system for the MIRAGE 2000-5, which is being jointly developed with GEC Avionics.

In the case of electronic warfare instruments, Inisel of Spain cooperates in the aviation field and Marconi Defence in shipboard equipment. TST cooperates in the STRATEGIE Program, and the German national DASS electronic countermeasures system is being sought for the European fighter, one of the reasons for Dassault Electronique's participation in the ILA in Berlin.

Sextant Avionique

The annual closing balance for Sextant Avionique for 1991 is symptomatic for the entire armaments industry. In the face of a 7 percent drop in turnover to Fr6.09 billion, the net loss amounted to Fr545.1 million. In 1990 it had still been possible to realize a gain of Fr188.7 million. The disappointing result was partially caused by extraordinary expenses in the amount of Fr363.3 million, related to the elimination of 1,100 work places.

Dassault Aviation Shows Profit

In the 1991 calendar year, Dassault Aviation achieved a turnover of Fr14.353 billion or, when its affiliates are taken into account, Fr15.901 billion. The military sector accounted for 74 percent of the turnover, while the civilian space project sector accounted for 26 percent. After taxes and the dispersal of Fr69.8 million to associates, the net profit came to Fr102.8 million. Orders to the amount of Fr12.017 billion were booked in 1991.

Dassault hopes to reduce the share of the military sector to 55 percent in the course of time. The company strategy will take two directions:

- investments in the major programs (MIRAGE 2000-5, RAFALE and FALCON 2000) to cover future market demand
- improvement of competitiveness by reducing operating costs.

In future, the company hopes to be more intensively engaged in space, especially through HERMES, and to enter future international cooperative programs.

Emile Blanc (board chairman of SNPE), Louis Gallois (board chairman of SNECMA), and Guy Schmit have been newly appointed to the administrative council, while the mandates of Thierry Aulagnon, Jean-Dominique Comolli, and Jean-Paul Gillyboeuf have been extended.

SNECMA

In 1991 the SNECMA group achieved a turnover of Fr14.4 billion, as compared with Fr14.1 billion in the previous year. In 1991 orders booked amounted to Fr7.2 billion, which represented a substantial decline when compared with the Fr10.5 billion in 1990. It is estimated that 1991 will produce a profit of between Fr50 and Fr100 million. The net profit in 1990 was Fr77 million.

Some Fr3.6 billion was spent for research, development, and the production start-up costs. Capital investments ran to Fr730 million, of which Fr155 million alone was allocated for a new GE90 test stand.

In cooperation with General Electric, the CFM88 civilian-applications engine will be developed from the nucleus of the RAFALE M88 engine. The M88-2 version is now flying in RAFALE prototypes. Further construction will be frozen in the third quarter of 1992. The M88-3, a variant with even greater thrust, will be offered for use in light military aircraft with one engine or in multipurpose combat aircraft with two engines. The even more powerful M88-4 will follow. M88-2 and M-88-3 without afterburner have the additional letter designation S, signifying a trainer.

The CFM88 will belong to thrust class 50 to 90 kN and is designed for 50- to 120-seater feeder aircraft. Presently, two different fan diameters are under study, the first of which has a diameter of 112 cm is designed for the lower thrust range, while the second, with a diameter of 140 cm, is for the upper thrust range. With these, SNECMA/GE enters the competition with BMW-Rolls Royce and MTU/P&W for the DAA-80 power plant.

SNECMA has an inventory of orders totalling about Fr34 billion. The following recent high points should be mentioned: Two SNECMA power plants made their first flight in 1991, namely, the M88 in the RAFALE and the CFM56-5C in AIRBUS 340. SNECMA has a 25 percent stake in the development of the large GE90 engine. Its first use will probably be in the Boeing 777. The CF-6-80-E1 engine has been chosen for the AIRBUS A-330.

The number of employees at FN Moteurs, a Belgian affiliate of SNECMA, has been reduced to 1,150. Last year, a new capital relationship was put into effect. Capital was built up to 2.5 billion Belgian francs [BFR]. SNECMA has a 51 percent share, Wallonien 30 percent, and Pratt & Whitney 19 percent.

Thomson S.A.

The parent company of Thomson-CSF—Thomson S.A.—suffered a loss of Fr702 million in 1991 with a turnover of Fr71.3 billion. Most of the losses came from the entertainment electronics affiliate TCE Thomson Consumer Electronic. The Fr2.47 billion loss in 1990 was of course considerably higher. Then Prime Minister Edith Cresson (for whom an executive board chair is being sought) wanted to balance off the losses by fusing the profitable CEA with Thomson-TCE.

Thomson CSF

The largest European producer of military electronics suffered a decline in turnover of 5 percent to Fr35 billion in 1991 because the AL Thakeb agreement with Saudi Arabia expired. Profit, on the other hand, could be increased 8 percent to Fr2.35 billion. The inventory of orders in late 1991 ran to Fr61.6 billion; it remained almost unchanged. The affiliates SGS Thomson (micro-electronics) and Sextant Avionique suffered losses. The shares in Altus Finance and Credit Lyonnaise (33 percent) yielded positive results.

The move to a commanding share in LTV Defense Systems is not being assessed positively everywhere in France.

Matra

Matra Defense is an affiliate of Matra Defense Espace; it had a 1991 turnover of Fr4.7 billion. This year orders to the amount of Fr5 billion were booked, thereby raising the inventory of orders to Fr12.9 billion. Sixty percent of the orders originate from exports, namely, 40 percent from Asia and 20 percent from the Near East and South America. Forty percent originate in Europe.

The company's activities range all the way from observation satellites (Matra Marconi Space) to command systems, air-to-air, air-to-ground and ground-to-air missile systems. Some examples of these are the MISTRAL AA system, the MICA air-to-air missile, the APACHE standoff weapon, and the KZO Brevel.

Matra will be represented at the ILA [International Air Show] in Berlin with two displays—weapons and space.

In order to achieve a financial balance, thought is currently being given to fusing Hachette, which is in deficit, with profitable Matra.

Aerospatiale's Martre on Capital, Structure, Airbus

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["The Aviation Industry Has to Accommodate Europe's Wishes"]

[Text] *Changes in the air and space industry have also had their effects in France, specifically on Aerospatiale. What could be more appropriate than to interview Henri Martre, chairman of the board at Aerospatiale since 1983, concerning the question of increasing company capital, the structure of the enterprise, Airbus, regional aircraft, and problems in the missile industry.*

Wehrtechnik: Most companies whose capital is in Government hands are undercapitalized. This is true in the case of Aerospatiale as well. Lack of capital limits management's flexibility. Are efforts underway to increase Aerospatiale's capital or broaden its capital base by bringing in partners? Of course, the decision is in the

Government's hands, but perhaps you would like to express your ideas on the matter.

Martre: It is absolutely true that Aerospatiale is undercapitalized. In recent years our turnover has increased by about 10 percent annually. In 1991 it actually increased 16 percent over 1990. In the years ahead we expect an annual increase of from 8 to 10 percent.

The Aerospatiale group is in the throes of intensive growth, and that requires an increase in company capital in order to finance such large investments and an increase in operating capital as well. As far as increasing operating capital, we are now negotiating with a new shareholder. The government, our main shareholder, has decided to welcome an increase in the share of a French bank—Credit Lyonnais. In this, and we emphasize, preparatory phase, the Government will work out the conditions with Credit Lyonnais, and it is very possible that our main shareholder will undertake further steps to increase company capital, perhaps by welcoming additional shareholders. The government will, of course, retain stock majority, which is in fact legally prescribed. But a good deal of room for negotiations remains open, since the government at the moment holds 99 percent of the shares, while the legally mandated least amount of shares is fixed at 51 percent. Obviously, between 99 and 51 percent, a good deal of space exists to take in new shareholders, if the Government so desires.

Wehrtechnik: Will the change in government have any effect on Aerospatiale?

Martre: As far as Aerospatiale is concerned, both the government and the opposition are in complete agreement. Even when Jacques Chirac was Prime Minister, Aerospatiale was never put on the list of companies to be privatized. Consequently, I believe that there is no conflict between the Government and the opposition as to whether Aerospatiale should be privatized or not. But of course that could change.

Wehrtechnik: Do you plan a new company structure, similar to that of Deutsche Aerospace, for Aerospatiale, namely, the company itself as holding with separate operating units under it?

Martre: During recent years, Aerospatiale's structure has changed considerably. This process will continue as the Europeanization of the aviation industry progresses. Involved in this, of course, is the fact that our main fields of activity, and this includes our product families and trade relations, must be reviewed in European terms and consequently in cooperation with the rest of Europe. It is in precisely this European framework that we are obliged to cooperate with our European partners, and especially with Deutsche Aerospace. This, for example, has led to the founding of consortia like AIRBUS, ATR, ARIANE, and others. Beyond that, it has even led to actual fusions as in the helicopter industry between MBB and Aerospatiale, which resulted in the founding of Eurocopter. You see, therefore, that even when the parent company Aerospatiale becomes smaller, the Aerospatiale group

grows. This process results in changes in the company structure in that Aerospatiale is becoming increasingly Europeanized. The exact same process may be observed in Deutsche Aerospace.

We are confronted here with a very interesting development, both in the economic as well as in the European sphere. The aviation industry in important European countries like France and Germany look for a national decision as regards company structures that will further European cooperation.

Wehrtechnik: You mentioned AIRBUS earlier on. When will Airbus, which is still a GIE, become a commercial company?

Martre: I view AIRBUS as an economic entity. Four partners have cooperated to create a product and a build up a worldwide economic system and a circle of customers. The four companies of the CPI (GEI) have therefore created a particular company structure, which resembles the structure of a consortium. On the one hand, there are the four partner companies and the consortium, namely Airbus Industrie. I have become absolutely convinced in the efficacy of this structure. A company capital, a selection of products, and a circle of customers have successfully been built up, which today comprises about 25 to 30 percent of the world market. At the present moment, there are firm orders to the amount of \$108 billion, of which about half have already been filled. This great economic and industrial success can be attributed to European cooperation as well as to the companies that have participated in structures that perhaps are not exactly like those in the past. Some may say that such structures cannot long endure, but I believe that they are appropriate to the current state of affairs.

It is obvious to all that such company consortia are being formed worldwide in our industry and in others. That is presently the case in the United States, for example, where an American combat aircraft is being developed in a cooperative venture involving three otherwise independent companies, namely, Boeing, General Dynamics, and Lockheed, which, to my knowledge, have not fused.

A further example is the U.S. combat helicopter COMANCHE, which is developed jointly by Sikorsky and Boeing. Boeing works more and more with other companies in specific projects. With regard to civilian aircraft, Boeing joined with a group of Japanese companies, consisting of Mitsubishi, Kawasaki, and Fuji. No one would assume from this that Boeing intends to fuse with the three Japanese companies. Nor, indeed, would anyone assume that the three companies of the Japanese group intended to merge. In my opinion, we have to get used to seeing such forms of organization, which display none of the conventional company structures but which function extremely well, throughout the world.

Wehrtechnik: In the case of Aerospatiale you separated AIRBUS from the Division Avions. What was the reason for that? Is the Division AIRBUS perhaps going in to a cooperation-holding at some later date?

Martre: Division Avions is primarily occupied with the production of civilian aircraft, but with military transports as well. This Division is currently working in three consortia simultaneously: AIRBUS, ATR, and EUROFLAG. In order to establish a Societe des Avions de Transport, we had to find the same partners in all conceivable fields of commercial aircraft. First, if this is indeed done, one could think of a fusion on the European level. Given the same partners, that would entail enormous difficulties, and we have no intentions of splitting up Division Avions in still smaller units. We cannot create a Division Avions AIRBUS, a Division Avions ATR, and a Division EUROFLAG. We only have one research division and one production system, which has to process the greatest possible number of products. This constitutes the main obstacle.

Wehrtechnik: How do you view the future of regional aircraft? Who will be cooperating with whom? I can't visualize the situation.

Martre: I have to admit that the present situation, which of course can change in the near future, is very complicated, if not actually quite confusing. If one simply considers the number of producers of regional aircraft in the world and then the actual market demand and the financial expenditures for product development as well as the need to cultivate a worldwide marketing and customer service network, one immediately sees that there are too many producers. It is therefore common knowledge that fusions are inevitable. Only the front office directorate of the Brussels Commission seems not to fully understand what is happening in the market. We are living in an age of fusions, of company fusions. You know that we, for our part, are pursuing Project DAA together with Deutsche Aerospace and Alenia; this will be publicized at ILA'92. At the same time, negotiations are being conducted with Deutsche Aerospace and Fokker. Deutsche Aerospace keeps us apprised regularly about progress in these talks.

Fusion plans are being discussed the world over between companies that are active in the field of regional aircraft. Of course I cannot stay current on all active projects. Sometimes it is a matter of what one actually knows, and at other times it is merely kitchen rumors. This field is so complicated that no one can predict future developments.

Fusions will become increasingly important in the near future, and that will necessarily lead to a redistribution of force relationships. I believe it is necessary that the commission in Brussels sees to it that the industry in this field build better structures at the European level.

Wehrtechnik: With regard to your comment that Thomson-CSF has assumed LTV's missile interests. Was this in the interests of the French government or not?

Martre: Thomson-CSF plans to take over LTV's missile section—an action that apparently gives the French aviation industry a splitting headache. There are already two missile producers in France, namely, Matra and

Aerospatiale. Furthermore, we are concerned that a French company in the electronics field is showing an interest in an American missile producer, since this could result in a competitive situation inside France at precisely the moment when there is a general decline in the military field. Everywhere the talk is about reducing costs through efficiency measures and restructuring.

Wehrtechnik: Would the production of the VT-1 by Euromissile be affected?

Martre: The VT-1 missile, which is seen as a modernization of the ROLAND and CROTALE, was, as you must surely know, developed in LTV in the U.S. on contract for Thomson, which also paid for the development. This missile is being delivered from the United States, but an agreement has been concluded between Euromissile and Thomson for the production of a European VT-1 and on the number of missile ordered in the U.S. But as far as the first orders are concerned, especially those for the French Navy and the French Air Force, they will most probably be delivered from the United States.

Structure, Problems of Italian Aerospace Industry

92WS0769B Bonn WEHRTECHNIK in German
Jun 92 pp 51-52

[Article by Andrea Nativi: "Where Does the Italian Aviation and Space Industry Stand?"]

[Text] The Italian aviation and space industry has been a partner of German industry for more than 20 years, for example, with respect to the G.91, F-104G, Piaggio 146, TORNADO, and European Fighter Aircraft programs. Nevertheless, little is known in Germany about the Italian aviation and space industry. Dr. Nativi, our contributor in Genoa, in his article describes the difficulties entailed in the reorganization of industry which essentially is concentrated in two government holding companies controlled by different parties.

Today, the Italian aviation and space industry is having a rough time. In a time of complex reorganization, external factors and purely home-made problems have caused a trend toward a recession.

In the big exporting countries, the political leadership supports local industry directly and financial institutions are available in order to provide financing for exports; the armed forces also support export efforts by means of demonstrations and visits to the military command echelons of potential customers.

Obstruction of Exports

In Italy, the exports of the armament, aviation, and space industry (both civilian and military) came to barely 1,000 billion lire in 1991, compared to almost 4,000 billion lire in 1984. This decline cannot be blamed on a decreasing demand; instead, it is caused by a complex bureaucracy that trips over itself, as well as by long-winded, laborious procedures.

Some of the negative examples, as to how Italian authorities handle sensitive cases involving arms exports, include the Iraqi Navy contract. Such failures do not help boost Italy's reputation as a reliable supplier of arms.

Last year, Parliament approved new regulations that can be considered satisfactory in terms of arms exports. Now the difficulties spring from the slow working style of the government authorities. Besides, subordinate sectors often act more Catholic than the Pope himself. For example, there was a paradoxical situation where spare parts shipments to other NATO member countries were delayed for many months. In some cases, distribution of brochures was even forbidden, not to mention a ban on the demonstration of hardware.

Attendance at aviation and space fairs is possible only after lengthy and difficult discussions as to the why's and wherefore's, if one intends to show more than just a few pictures plus a video. All of this, naturally, only makes the foreign competition very happy.

This attitude of disinterest and aversion against the armament, aviation, and space industry is utterly incomprehensible because this industry has for decades belonged to the state itself. The state, as a political entity, hamstringing itself as regards its industry entrepreneur function.

The Structure of Industry

IRI [Industrial Reconstruction Institute]

Here, Italy's industry is in practice controlled by the two big financial holding companies, the IRI and the EFIM [Manufacturing Industry Holding and Financial Company]. That forces private industry into a secondary role as regards size and sales volume. The IRI operates either directly or through the holding company called Finmeccanica [Mechanical Engineering Finance Corporation]. It controls the aviation and space industry. Alenia is the leader here. Compared to the other European conglomerates, it is a mini-giant that resulted from the merger of Aeritalia and Selenia. Its products include military and civilian aircraft, electronic systems, engines, and regulating and monitoring systems, as well as partnerships in many Italian and foreign enterprises.

Alenia is also influenced by the general situation on the world market. In 1991, Alenia SpA—not including its affiliates—achieved a sales volume of 3,866 billion lire, as against 3,221 billion lire the year before. For the concern as a whole, the sales volume comes to 4,800 billion lire and the profit is 600 billion lire. The armament share out of the total sales volume is just a little bit below 60 percent. At Alenia Aerospace, the export share comes to 60 percent whereas at Alenia Defense Systems, it is only 30 percent. In spite of the unsatisfactory financial results, investments for research and development still amount to 1,000 billion lire per year.

Alenia is subdivided into three divisions: aviation, defense systems, and civilian systems, with Alenia Spazio as 100-percent affiliate.

By the end of 1992, the company will have to let about 3,000 people go (about 10 percent of the total personnel force); this will be the result of early retirements or "unemployment benefits." At the end of 1990, it employed around 30,500 workers.

EFIM

The situation at IRI looks difficult but it is downright dramatic in the EFIM Group. The most important holding company of EFIM, FINBRED (Ernesto Breda Finance Company), holds the capital of Officine Galileo and SMA [Naval and Air Signaling] and controls OTO Melara and Breda Meccanica via OTOFIN. Results for 1990 show a net profit of 2.1 billion lire with a total sales volume of 1,151 billion, earned mostly in the armament sector. As of 31 December 1991, the enterprise employed 7,000 persons. Layoffs are unavoidable; they have already been announced by OTO Melara and Breda will follow suit.

EFIM also controls the Agusta Group via AVIOFER Breda. In spite of a sales volume of 1,056 billion lire and an order portfolio of 3,342 billion, the enterprise ran in the red in 1990. It employs 9,400 workers presently.

EFIM announced recently that the electronics and component divisions have to be reorganized. A new subholding company, EFIM Sistemi, will be set up in order to control both OMI and Agusta Sistemi (it will be taken out of the Agusta Group), as well as Officine Galileo and SMA. The new group will employ 2,500 persons and will achieve an output volume of 500 billion lire but here again one can expect layoffs.

Agusta SpA, which belongs to the EFIM state holding company, had to report a loss of 1.9 billion lire in 1990. In the future, the enterprise reportedly will confine itself to the helicopter division; that means concentrating on EH-101, NH-90, A-129, and A-109. Talks are currently in progress to merge SIAI Marchetti with Aeromacchi. Alenia has a partnership share in the latter amounting to 26 percent; the Foresio Family holds the majority but it reportedly is to dispose of its shares.

EFIM's main problems, as a whole, add up to heavy borrowing, negative financial results, and an empty order portfolio. These problems are made worse by the government's refusal to inject fresh capital and, on the other hand, to assume the debts of the EFIM firms or to pay them with long delays. The firms therefore must get the necessary capital on the market and that only increases their borrowing.

Fiat Group

The Fiat Group is the third factor on the Italian aviation and space industry scene. The armament division is currently being reorganized. According to the current

organizational setup, Gilardini is the leading company in the group for the component division and also controls most activities via the SDS (Defense and Space Systems) Grouping that belongs jointly to Gilardini and SNIA [National Company for Utilization] (50:50). SDS has four divisions, to wit:

- defense (with BPD [Bombrini Parodi-Delfino], Borletti, Marelli Avio, SEPA and Whitehead);
- space (with BPD and Regulus);
- miscellaneous activities (with BPD, Simmel, SIPE [Italian Explosives Company]-Nobel);
- energy.

There are indications that SDS, in the new organizational setup, will become the Group leader with a name change to read: Fiat CIEI [Components and Systems for Energy and Industry]. Fiat CIEI will in succession absorb the following enterprises: SEPA, Marelli-Avio, Borletti, and, later on, Whitehead and all other enterprises. In contrast to SDS, Fiat CIEI will be organized in the form of a matrix structure. In 1990, SDS had a sales volume of 758 billion lire, with 574 billion being accounted for by armament activities. The loss came to 29.7 billion and 109 billion were invested in research and development. In addition to the Gilardini Group, Fiat also has aviation and space interests through some other affiliates, or joint ventures, such as Fiat Avio, IVECO, Astra, IVECO-Magirus, and COMAO.

The economic recession has also hit the vehicle market and the Fiat Group as a whole is now getting to feel that situation. The armament division has its own problems. Cost-reducing measures will thus be unavoidable.

Apart from these three big blocks, that is, IRI, EFIM, and Fiat, there are only smaller enterprises which, for the most part, are still tied up with the big ones via production cooperation agreements or capital partnership shares.

Piaggio, with 1,800 employees, 400 of whom are considered superfluous, is still controlled to the extent of 69 percent by the Piaggio Family; the remaining 31 percent are already in Alenia's hands. Elettronica, one of the most capable and modern armament firms in Italy, belongs to private investors to the extent of 53 percent; the other 47 percent are in the hands of Finmeccanica. Something similar also applies to Aeronautica Macchi with 3,300 employees and a sales volume of 400 billion lire, in which Alenia also already shares to the extent of 26 percent. Magnaghi also has a share in Alenia with 35 percent and MICHl holds 5 percent.

Here we might also mention Italtel [Italian Telephone Company] (80 percent capital share held by STET [Telephone Finance Corporation]), Microtechnica (United Technologies), Oerlikon Italiana, and Contraves Italiana (Oerlikon-Buehrle), Marconi Italiana and Litton Italiana. The French Alcatel Group controls Alcatel Italia, a diversified firm with a sales volume of 3,000 billion Lire and more than 18,000 employees who also work in the armament as well as aviation and space divisions. These

activities are combined in Alcatel Telettra. Telettra was taken over by Fiat FIAR [Italian Radioelectric Apparatus Factory] which used to belong to Setemer Ericsson and which is now under government control. Finmeccanica and Finoreda already hold 40 percent of the share capital and want to acquire another 27 percent over the next five years. It is expected that 5,000 out of the 41,500 employees in the Italian aviation and space industry, as per the year 1990, will have to be let go as a part of the efficiency and streamlining effort. It appears unavoidable that—if Alenia is “fully operational”—the question of a single aviation and space firm will come up again. EFIM's bad situation seems to be heading for such a solution. On the one hand, it seems to make sense to combine Agusta and Alenia; but financial and political circles are discussing a number of other solutions as regards armament-oriented companies and the computer/electronic nucleus. One may assume that all of these capacities are to fall under the control of Alenia whereby the Sistemi Difesa Division is to be expanded perhaps all the way to a relatively independent 100-percent affiliate.

On the other hand, one must not forget that the Fiat Group is very much interested in taking over a part of the capacities of EFIM, especially OTO Melara.

Of course, one cannot establish a huge enterprise, such as DASA, BAe, or Aerospatiale south of the Alps; but while MTU [Machine and Turbine Union] in Germany, Rolls-Royce in Great Britain, and SNECMA [National Association for Research and Construction of Aircraft Engines] in France dominate the engine sector, Italy allows itself the luxury of three different, independent firms, that is, Fiat Avio, Alfa Avio, and Piaggio. The uncertainty about the future of the Italian firms also prevents the formation of long-term strategic alliances with European partners. Whenever companies with differing financial and technological resources team up, the weaker one winds up in a minority role. This is why Italian firms traditionally always entered into ad-hoc agreements on special programs or sectors, sometimes through joint ventures or economic interest groups. Examples of these trends are ATR [Regional Transport Aircraft], and EURO SAM, followed by the agreement between Alenia Spazio with Alcatel and Aerospatiale concerning the takeover of 49 percent of Loral Space Systems, then the Alenia-Matra Agreement in the missile sector plus the joint venture Gilardini SAGEM [French Industrial Corporation for the General Application of Electricity and Mechanics] for inertial systems (ESI), SAT [Anonymous Telecommunications Company] Galileo in optronics, etc. The project calling for a strategic alliance between Matra and the EFIM Group has been initialed but then it was blocked.

Effect of Common Market on European Aerospace Industry

92WS0769C Bonn WEHRTECHNIK in German
Jun 92 p 13

[Article by Fausto Cereti: “The European Aviation and Space Industry and the Coming Common Market”]

[Text] It seems rather paradoxical but on the eve of the Common Market, looking at the situation from the viewpoint of the aviation and space industry, one can see a shrinkage of this market rather than an increase. After all, the aviation and space industry market is globe-girdling and has been such for many years, practically since the end of World War II. For the active participants in this market, this means that the technology, the models, and the performance figures, both technically and economically, were practically the same in the Western world as a whole, especially in the commercial sector. This kind of situation takes shape regardless of the fact that the United States and its overpowering industry—which, in the past, sprang from the war effort—worked as unifying factors.

But, while the market was already global as regards technology, the industry remained stubbornly national, mostly for reasons of national security. However, as regards the people and nations, the exchange of reciprocal knowledge and mutual confidence was open and comprehensive. On the industrial level, though, each national industry was allocated a restricted field of activity for production and commercial activities.

This situation appeared entirely acceptable—at least for the majority of the market participants—as long as military activities were dominant.

But to the extent that commercial activities were added, the imbalance of this model emerged into the light of day and the system began to be changed toward a multipolar world of national and regional industrial subsystems that were competing with each other.

Such change became even more striking in the field of civil aviation with the impressive development of the AIRBUS family in Europe, the dominance of European and countries on the fringe of the Soviet orbit as producers of regional aircraft plus the unstable situation that developed in the general aviation field. But, even on the military market, there were many programs that were not completely integrated into the technology that had been derived from American technology.

Regardless of this rather odd development, one can consider the aviation and space market as one of the most global sectors of the world market for industrial products; there is stiff competition here, both directly and indirectly, regarding both commercial and military products. Now we have the European Common Market for aviation and space products. In the commercial field, this is a consequence of the Rome Treaty as well as the subsequent developments, whereas, in the military field, this is a consequence of an independent and timely decision by the European defense ministers.

This development is being welcomed by European aviation and space industry which, as we saw, moves in a mostly global market and thrives there. But there is one condition and that is that government support for industry, which in the past was granted magnanimously worldwide, either as direct support for research and

development as well as the start of new programs or as indirect support by means of huge military and space programs, will not be terminated with a reference to the rules of the free market, especially when these rules relate only to the newly-created common market.

The long-drawn-out discussion on the GATT level concerning restrictions on startup aid and the attendant indirect support will explain the problems which were caused by this problem on both sides of the Atlantic and with regard to the aviation and space industry.

If this affair, as it looks now, can be resolved satisfactorily, then this will result in a business sector offering equal opportunity and chances for the global market.

Another problematical point in this connection consists of the possible changes in the rates of currency conversion. This does not involve sound commercial reasons but rather a political manipulation of interest rates as a result of which industrial competition could become unfair.

Global and identical rules of the game must prevail on the world market, all over the world. As we now look somewhat more deeply into the Common Market, we must devote maximum attention to the rules that the authorities of the Common Market will force upon us so as to protect competition.

As we have seen, the aviation and space industry is global, now and in the future. Therefore, the guardians of competition must take into consideration this special feature of the aviation and space industry and must view the world market as a reference level when it comes to the application of principles and rules.

If too much attention is devoted to the rules within the common interior market, without considering the needs of the European industry as a whole, in other words, that it must be competitive against global competitors, then serious damage could occur.

One should follow two ideological approaches to get to the processes that must be developed so as to foster the competitive capacity of European industry:

According to one approach, it is possible to employ European high-performance sources with support from domestic sources as well as sources from the Community as a whole in order to concentrate all available power on the struggle against outside competitors.

According to another approach, it would be better to implement the competition within the Common Market in order to strengthen the muscles for the coming fight with the above-mentioned outside competitors.

Both methods have their advantages but a thorough analysis of the economic and social costs required to support many of the performers in the fight for the world market must be weighed carefully against the overall benefit to be derived from the share in the world market that is to be attained. Competitive capacity indeed is a

healthy thing and should also be basically encouraged. But competition should not be viewed as a goal in itself, especially in a sector in which the program launching costs can amount to as much as one-third of the total program costs.

The problems and the attendant worries are even greater in the military aviation and space field because the pressure toward a common armament market is reduced by the need for protecting national security and industrial needs, packaged to form the really well-defined concept of the "fair return," such as it was drafted by the defense ministers of the European countries.

Military and industrial experts from the countries involved are now addressing these problems and we have no reason to doubt that an effective solution will be found, as pointed up also by the existence and success of so many European production cooperation programs in the field of military aviation and space.

Attempting to find the bottom line, it is my impression that the approach of the Common Market essentially offers a favorable opportunity for us in the European aviation and space industry, that is, an opportunity to look more closely at the road by which we approach the global market in the light of the growing realization of our regional identity as Europeans and in the firmly-rooted certainty that our activity is truly global.

DASA's Mehdorn on Airbus Production, Fokker, EFA

92WS0770A Stuttgart *FLUG REVUE* in German
Aug 92 pp 56-57

[Interview with Hartmut Mehdorn, the new DASA managing director for aviation, by Goetz Wange; place and date not given: "We Can Build More Than Just Tin Cans"—first paragraph is *FLUG REVUE* introduction]

[Text] With the Airbus A-321, the assembly of another big commercial aircraft will be completed at German Airbus in Hamburg. Thanks to stubborn negotiations by Hartmut Mehdorn. The head of German Airbus must now also organize the aviation division of the parent company, German Aerospace (DASA). The negotiations with Fokker on regional jets and the consequences of the decisions reached in Bonn on the European fighter aircraft, EFA, (Fighter 90) are still open.

[*FLUG REVUE*] What is the significance of the final assembly of the Airbus A-321 in Hamburg for the German aviation industry, apart from the importance to its [international] standing?

[Mehdorn] Germany has always played a critical role in the production of the Airbus. We've always defended ourselves when it is claimed that the Germans make the tin cans and the French the quality equipment. From a purely visual standpoint, it's always looked as though we were worse off. But during the initial phase there was no way we could start moving at a slower pace. With the

increase in business activities, the thing to do is simply to set up a narrow-body division and a wide-body division within this Airbus-assembly cycle. This is not only an opportunity to gain prestige, but also a matter of cost effectiveness.

[*FLUG REVUE*] In order for it to be a narrow-body center for Airbus, to be consistent the A-320 final assembly operation would also have to be transferred from Toulouse to Hamburg.

[Mehdorn] Up to now, we haven't even attempted to get the A-320 to Hamburg, since we said that the new final assembly operations would almost be given the status of being integrated final assembly operations. We will, however, at first leave the current final assembly operations the way they are. This applies to the A-320 just as it does to the A-300 and the A-310. Naturally, we'll think it over just the same. Perhaps someday—after discussion as partners with Aerospatiale—the opportunity for an exchange will present itself. I could imagine Aerospatiale saying: If less than three or four A-320's a month are on the assembly line, take the final assembly operation to Hamburg. As a countermove, we could turn over to them the outfitting of the interior for the A-300 and the A-310.

[*FLUG REVUE*] On 1 August you will be assuming the directorship of the DASA aviation division. New orientation has not been a national concern for a long time now. By way of example, DASA is negotiating with Fokker with respect to the takeover of a majority share of the company in order to assume a leading position in the regional jet sector in Europe. What, in your opinion, do you think the final solution will be in this sector of the industry?

[Mehdorn] We're talking about four market segments: the 15- to 50-seat propeller aircraft sector, the 60- to 130-seat regional aircraft market, the Airbus family for from 130 to 400 passengers, and above them the market for large-capacity aircraft with from 500 to 800 seats. DASA is of the opinion that these are four different markets, each of which it has to tackle differently in terms of marketing as well. We've already come a long way with Airbus and we may suppose that we'll be doing exactly the same thing with the regional aircraft market. And we'll be using Fokker instead of Airbus Industry to gain access to that market. Also on a European basis again, not only with Fokker alone, but with Aerospatiale and Alenia. And, as we will be in the lowest market segment, we may naturally suppose that Dornier products will be put on the market jointly with the French and the Italians via the ATR [Regional Transport Aircraft].

[*FLUG REVUE*] Is that really realistic? The ATR family claims that it is successful on the market; and there are sectors in which Dornier products will more likely interfere with partners' activities.

[Mehdorn] The technology is really making rapid advances, much more rapid than we manufacturers sometimes really want it to. We would, of course, prefer

to develop something and then market it for as many years as possible. But this is unfortunately not the case. The Dornier 328 is the most up-to-date aircraft of its class. If we succeed in embedding the aircraft in a strong marketing organization and bringing production costs down to a level at which there's still a mark or two [in profits] left over, the Dornier 328 will have a real chance of making it.

[FLUG REVUE] Do you support development of a long-bodied version of the 328 on the DASA board of directors?

[Mehdorn] The 328 needs a long-bodied version, as does every other aircraft too, actually. But with the 328-S the question arises as to whether we'll lead the way on our own or with which European partners. This is something that we want to no longer decide on alone, but along with other Europeans.

[FLUG REVUE] Are you already discussing this in concrete terms with your partners, Aerospatiale and Alenia?

[Mehdorn] We're rather just thinking about it at the present time.

[FLUG REVUE] DASA was originally aiming for the systems management of the regional jet. But now there's talk of industrial management in the negotiations with Fokker. Has DASA given up its demand in so doing?

[Mehdorn] No. We've only put up another nameplate on the door. Since Fokker will then be German Aerospace—if that's what it wants. DASA will be managing the aircraft production and using the Fokker Company for its access to the market. Therefore, there will be a program manager at DASA for the 65- to 130-seat Regioliner jets segment and this manager will be referred to as Fokker.

[FLUG REVUE] In the event that this is agreed on, will it also still be valid for the Regioliner?

[Mehdorn] If we take the joint venture route with Fokker, we assume that the Fokker 100 and the new Fokker 70 derived from it will be kept on the market for a while longer to keep production at full capacity for as long as possible. But these models will at some point be replaced by new aircraft of the Regioliner family. Up to now, we were working on the assumption that we would go into operation in 1997-1998, but, if we reach agreement with Fokker, it will be more like the year 2000.

[FLUG REVUE] You haven't mentioned the Fokker 130 at all, an aircraft that has also been introduced into the talks as a version by the Dutch.

[Mehdorn] Fokker has in fact presented it as a project, but we've never seriously talked about it. The Fokker 130 has scarcely anything to do with the Fokker 100; rather it is a completely new aircraft. A new wing would

be needed and the systems would also have to be very greatly modified. So we might as well go right ahead and design a new aircraft.

[FLUG REVUE] The current problem child, Fighter 90, belongs in its class in its new function. Do you at present already have an idea as to what a Fighter 2000 or a light fighter—cheaper versions about which there is speculation in Bonn—might look like? Can a fighter plane be put together almost completely with various building blocks from a construction kit?

[Mehdorn] Well, in principle it will work. We'll have to think separately about whether this is the right way to go. Naturally, it's conceivable if all the essential elements contained in the Fighter 90 program are retained. As examples, I'd like to cite the structure and basic equipment of the systems. Consequently, if they say: I'll do without certain things, it might work—as long as we can agree with our partners on it. We might not tease the last bit of power out of the engines, do without the latest form of the newest materials, or equip the fighter with a less powerful radar.

[FLUG REVUE] Will it also work if you switch from a twin-engine fighter to one with only one engine?

[Mehdorn] Then it would be a new airplane. Then we would have to start to develop it all over again, or we would have to see how we would in general go on from there. There are still, of course, the French Rafale and the Swedish Gripen. But if I rightly understand the decision reached in Bonn, a purchase is ruled out as a solution. In principle the need for a new fighter aircraft was endorsed. Therefore, our first option would be to trim enough fat off the Fighter 90 for it to simply become substantially cheaper. But we're not the operating authority. The one who has to deal with the fighter will have to say what he wants and can afford. Then we'll tell him whether and how it can be done and how much it will cost.

[FLUG REVUE] There's been talk of cooperation with the French. But the Rafale has already been fully developed. What more can be done with it?

[Mehdorn] Well, the Eurofighter and the Rafale cannot be combined as such. But the chancellor still wants to enter into talks with the French. These will not only be very difficult, but they will in any case lead to enormous additional costs and costs for development. It should also not be forgotten that we're European partners in the Eurofighter program. As partners, we have to reach agreement on it and make compromises. Now if some of us here suddenly wake up and say that we need some other aircraft, that may not necessarily be the case with the other party to the program. But a trimmed-down Fighter 90 is conceivable, in which case the English would get a good version, the Italians and Spaniards a fairly good one, and we Germans a worse one.

German Aerospace Research Institute Cutbacks Announced

Loss of Positions

93P60026A Duesseldorf *HANDELSBLATT* in German
15 Oct 92 p 31

[Text] Berlin—The German Research Institute for Aerospace (DLR) is faced with difficult times. At the institute's annual press conference, chairman Walter Kroell announced a reduction of about 450 of the 4,300 jobs of the research institute, whose headquarters are in Cologne-Porz. "We must reduce capacity to an unprecedented extent," said Kroell in Berlin during the annual meeting.

However, no institutes are to be closed, however departments and working groups will be disbanded. Unaffected by the reduction are the roughly 1,150 positions which are financed from project funds. The DLR annual report will be published today [15 Oct 92].

Personnel costs represent about 56 percent of DLR's total expenses. It must be ensured in the future, Kroell said, that there is a balance between material and personnel costs. Personnel reduction should take advantage of natural attrition. Kroell justified the adjustment measures by the increasing difficulty of obtaining third party funds and a decreasing willingness of industry to support research projects. Nevertheless the DLR hopes to maintain the third party volume, which represents about 40 percent of the institute's total budget of DM700 million. Otherwise there would have to be further personnel reductions, he said.

DLR must gradually develop into a European aerospace institute, Kroell continues. In this connection he proposed increased cooperation with the CIS states. The DLR was pursuing several aims with this cooperation. On the one hand, the "internationally famed research capacity, which in the present phase of the upheaval threatens to be lost without outside aid, will be maintained." On the other hand the DLR wants to ensure its own top position in European aerospace research. In this respect, "sharing of work and the use of the installations available in the CIS are meant to avoid expensive, large scale investments in the West" and to save money. Another form of cooperation is the exchange of about 40 guest scientists, Kroell said.

The highlight of cooperation so far was the Mir 92 mission, during which a German researcher stayed on board the Russian space station. The interplanetary Mars 94 mission represents another large project, to which the DLR, with the Russian Institute for Cosmic Research (IKI), is making a central contribution. Thus a Russian probe will carry a stereo camera system developed by DLR which is supposed to take precise 3-D photos of the Mars surface.

Reaction of Director

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[Text] Berlin—According to the chairman of the German Research Institute for Aerospace (DLR), Professor Walter Kroell, the subsidy funds which the minister of research has frozen until 1994 (DM450 million in 1991) will lead to a "loss of assets." The resulting cutback of about 15 percent in real terms of the DLR budget (DM749 million in 1991) cannot be compensated by streamlining measures, Kroell reported at the DLR annual meeting today in Berlin.

The DLR plan is to eliminate by 1996 about 450 of the current 4,300 basically funded positions, including 130 in the technical/administrative area. These reductions would mean up to 25 percent fewer personnel in individual areas, as well as the combining of institutions. At the same time, international competitiveness is to be maintained.

In this context the DLR board points out that the great expenses in the areas of aerospace and energy technology for research, technical preliminary development and operation demands a more marked combining of capabilities on the European level. "Our international ability to cooperate and compete in these areas should be secured not on the national, but on the international level," Kroell emphasizes. This is true for both research and industry, he said. It is time that national large scale research in aerospace attains a European dimension and that such institutional structures are created, according to Kroell.

The result should not be a centralized unified European organization, but rather a close institutional link between the existing national aerospace research centers. This association might be called "European Aeronautics Institution," said Kroell.

In the future, DLR plans to engage more in robotics and automation. For this reason, it planned to found a separate institute for automation and robotics. However, this project could not be accomplished because of a lack of funds. Therefore DLR has changed the name of the Institute for Dynamics of Flight Systems to the Institute for System Dynamics and Robotics. According to Kroell, a good start has been made to involve the new DLR center in Berlin-Adlershof in robotics.

The former Institute for Cosmic Research of the GDR Academy of Sciences is a reflection of the "dramatic change in the research sphere in the reunited Germany," Kroell said. The establishment is now in a difficult transition period, it is said. Its absorption in the western research scene requires considerable time and expense. Kroell made it clear that for financial reasons there are no large scale national projects foreseen in which the Berlin center could participate in after 1994.

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